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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,683	03/17/2004	Yoshiyuki Tsuji	250502US0X	1876

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EXAMINER
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O HERN, BRENT T

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/801,683

Applicant(s)

TSUJI ET AL.

Examiner

Brent T. O'Hern

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group I, claims 1-7 in the reply filed on July 24, 2006 is acknowledged. The traversal is on the ground(s) that no adequate reasons and/or examples have been provided to support a conclusion of patentable distinctness or shown that a burden exists in searching all of the claims. This is not found persuasive because as stated in the previous office action dated 23 June 2006, the product can be made by a materially different process and the inventions have acquired a different status in the art.

The requirement is still deemed proper and is therefore made **FINAL**.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 3 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase **“a sliding frictional coefficient of the outer surface of the crucible to a carbon at 1500 degree C is more than 0.6”** in claim 3, lines 2-3 and claim 7, lines 7-8 is vague and indefinite because it is unclear to one of ordinary skill in the art what is meant by “to a carbon”. It is unclear whether the Applicant is referring to a friction test, an adjoining layer containing carbon or something else.

Clarification and/or correction is required.

**Claim Rejections - 35 USC § 103**

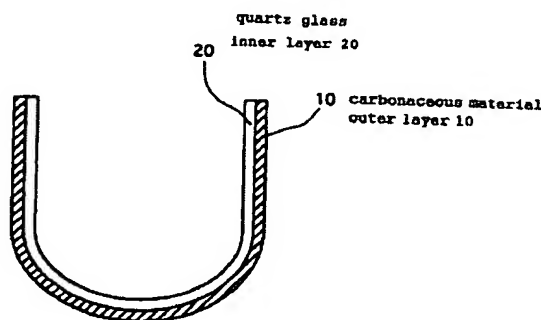
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji et al. (US 6,524,668) in view of Hellmann et al. (US 6,150,006).

Tsuji ('668) teaches a silica glass crucible (*col. 3, ll. 25-34 and FIG-1, quartz which is silica*), however fails to expressly disclose wherein at least an outer surface of a wall part of the crucible is covered with fine grooves having a length of less than 200  $\mu\text{m}$ , a width of less than 30  $\mu\text{m}$  and a depth of from more than 3  $\mu\text{m}$  to less than 30  $\mu\text{m}$ ; the fine grooves exist on more than 10% of the outer surface of the crucible; a sliding frictional coefficient of the outer surface of the crucible at 1500 °C is more than 0.6 and wherein the number of projections having a height of 0.1 mm or more is an average of less than 5/mm<sup>2</sup> per unit area on the outer surface of the crucible.

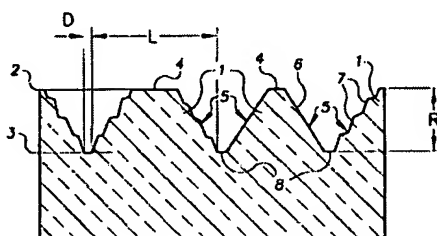
FIG. 1



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However, Hellmann ('006) teaches wherein at least an outer surface of a wall is covered with fine grooves having a length of less than  $200\text{ }\mu\text{m}$  (*col. 2, ll. 9-10 and FIG-1*), a width of less than  $30\text{ }\mu\text{m}$  (*col. 4, ll. 22-25 and FIG-1, #D*) and a depth of from more than  $3\text{ }\mu\text{m}$  to less than  $30\text{ }\mu\text{m}$  (*col. 2, ll. 7-8*) for the purpose of providing a surface that is suitable for adhesion to subsequent layers (*col. 2, ll. 1-4*).

FIG. 1



Regarding the percent surface covering, Hellmann ('006) teaches wherein at least 10%, if not 100%, of the outer surface of the substrate is covered with the irregular elevations (*col. 3, l. 66 to col. 4, l. 7*) for the purpose of providing a surface that is suitable for adhesion to subsequent layers (*col. 2, ll. 1-4*).

Regarding the sliding frictional coefficient, Hellmann ('006) teaches wherein the surface is roughened to provide a surface that is suitable for adhesion of subsequent layers (*col. 2, ll. 1-5*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to vary the surface texture so as to provide a roughened surface with the above sliding frictional coefficient in order to provide a surface that is suitable for adhesion to subsequent layers.

Regarding the surface roughness, Tsuji ('668) teaches an average surface roughness between  $0.1$  and  $10\text{ }\mu\text{m}$  ( $0.01\text{ mm}$ ) (*col. 2, ll. 7-8*), wherein the

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minimum/maximum average dimensions are from 1/1,000 to 1/10 the size of Applicant's 0.1 mm, therefore it would clearly be obvious to provide less than 5/mm<sup>2</sup> per unit area having projections having a height of 0.1 mm or more.

The phrase "used for pulling silicon single crystal" in claims 1 and 6, line 1 of both claims, is not given any patentable weight since the applicant is introducing **use limitations** into the product claims (see MPEP 2173 (q)).

The phrase "wherein the outer surface of the crucible is covered with the fine grooves by carrying out a sand-blast treatment and a hydrofluoric acid etching on the outer surface" in claim 4, lines 2-4 are **process limitations** in a product claim and hence not given any patentable weight since patentability of a product does not depend on its method of production (see MPEP § 2173.05(p)).

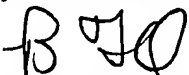
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brent T. O'Hern whose telephone number is (571) 272-0496. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on (571) 272-2172. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Brent T O'Hern  
Examiner  
Art Unit 1772  
August 8, 2006

  
NASSER AHMAD  
PRIMARY EXAMINER  
8/14/06